

INTRODUCTION

The demand for transport is composed of demand for the movement of goods and demand for the movement of people along particular routes and in particular areas. As with demands for other services, the quantity demanded may depend on the price the consumer has to pay and on the standard of service he is offered. On the chief forms of transport in this country, road and rail, the movements of people and of goods compete for the facilities available and together create demand for increased facilities.

2. The Group has recognised two distinct problems and considered them separately:—

- (a) transport between major centres of population and industry, (or "inter-urban" transport);
- (b) transport within cities and towns and especially within the conurbations (which we later call "the urban problem").

There is a third general category in transport with which the Group has not to any great extent concerned itself, namely:—

- (c) transport in small towns and rural communities "off the beaten track".

3. The demand for transport, both inter-urban and urban, is affected by:—

- (a) the volume, location and pattern of production, which is the main influence on the demand for transport of goods; and
- (b) the size and location of population and levels of personal incomes, which, together with people's social habits and the price of motoring determine the ownership of private cars and the propensity to use them, as well as the usage of public passenger transport.

4. To reach any judgement about the transport policies that should be followed and the desirable scale of investment in transport, it is necessary to establish:—

- (a) what the total demand for transport will be and where it will arise;
- (b) by which form of transport goods and people may be expected to move;
- (c) the extent to which the facilities now available developed on the lines of present policies may be expected to deal with the loads falling on each form of transport; and
- (d) which form of transport in particular circumstances minimizes the call on community resources.

5. For *inter-urban transport* the Group has, so far as present data and techniques permit, made forecasts of the future growth in total demand for inland transport and assessed the likely shares of road and rail in this total. This study and its results are described in paragraphs 8-65 below.

6. In *urban areas* we have not attempted any forecast of demand. No systematic studies have yet been completed of the transport situation in cities in the United Kingdom and far too little is known about the factors generating demand for either goods or passenger transport in urban areas. Moreover, in the larger cities at least, passenger transport by private car, particularly at peak hours, is restricted by the capacity of the street system (by congestion, by parking restrictions, etc.). It would not, therefore, be sensible to attempt a forecast based on past trends, since past demand will be an imperfect guide in a period in which changes in the capacity of the system are planned. We have, instead, made a qualitative assessment of the urban situation, and identified the main problems which arise in urban areas. These are discussed in paragraphs 66-72 below.

7. Finally, since our studies of both inter-urban and urban transport were limited at many points by lack of data and even by lack of techniques for studying the problems of future development of transport requirements, we outline in paragraphs 73-79 those areas in which further *research* seem to us to be most necessary.

INTER-URBAN TRANSPORT

General

8. Our method of forecasting inter-urban transport was essentially a statistical exercise in which an examination of past trends in population, in production and incomes, and in transport and travel has been used as a guide to future development. Having established a past relationship, we have developed projections of transport demand for the future on certain assumptions about growth in population and growth in output up to 1980.

9. The forecasts for goods traffic in particular are related not only to growth in total population, but to rate of growth in the working population and of output per head. Here we have taken as our basis assumptions about the rate of growth in the economy during the 1960's and 1970's which are similar to those used in other long-term forecasts of growth in the economy, as, for example, in the estimates of traffic through British ports undertaken for the Rochdale Committee. These assume that in the next few years, that is in the period up to 1966, gross domestic product (G.D.P.) increases at about 3 per cent per annum compared with the rate of about 2½ per cent during the 1950's.* In the period beyond 1966, two alternative rates of growth in gross domestic product have been used, one of 3 per cent per annum and one of 4 per cent per annum.

10. In addition to these assumptions about growth in the economy as a whole, the Group based its work on a study by the National Institute of Economic and Social Research of likely developments up to 1970, which included forecasts for each main sector of the economy. It also had the advantage of information on coal supplied to it by the Ministry of Power and of a study on steel by the Iron and Steel Board ("Development in the Iron and Steel Industry: Special Report 1961" contained estimates of output for 1965

* This is below the rate of 4 per cent for the period up to 1966 since adopted by the National Economic Development Council and accepted by the Government.

and the early 1970's). These are the two major industries which it is most important to treat separately, since they make particularly heavy demands on the transport system.

11. The following sections describe in more detail the method and assumptions, and the consequent limitations of the results, for both goods traffic and passenger traffic. There is, however, one general point to which we wish to draw special attention, since it affects both goods and passenger transport. All our studies are in aggregate terms; we have been unable to do more than examine the future course of demand for the country as a whole. It is important to note, however, that transport services have to be available not only in the right quantities and at the right price but also in the right places, and that planning of transport capacity can in practice take place only in terms of planning for particular routes or areas.

12. Moreover, even total transport demand is, in the long term, dependent on industrial location as well as the level of industrial output, while at the same time industrial location is itself influenced to some extent by the availability of transport facilities. It is not, therefore, possible to make any simple statement about the way in which transport, travel and industrial location will inter-act in the future. This does, in our view, emphasize the importance of local or regional studies of transport in relation to changes in population and industry.

13. Although the study has not established how demand will change in different parts of the country, we should note that, on both road and on rail, present demand is very heavily concentrated on a relatively small part of the network. The British Railways studies published last year revealed for the first time that, for both passengers and goods, about 95 per cent of the total railways' traffic is carried on only half the system; 99 per cent of freight traffic is carried on 70 per cent of the route mileage. A recent survey of the road system by the Road Research Laboratory shows a similar degree of concentration on the main roads with 95 per cent of all road traffic on only 50 per cent of the roads.

14. Not only is the distribution of traffic over the two systems similar, but the main heavily loaded routes, which are of course those connecting the main centres of population and industry, are mostly parallel road/rail routes. At the other extreme, both the road and rail systems have a large mileage of very lightly trafficked routes. Again the area distribution is very similar, most under-utilised railways being in those areas where the road system also has spare capacity. Economic growth on the scale we have assumed is not likely to give rise to any large shift in traffic, whether by road or by rail, towards those areas which are at present lightly trafficked. Except for private motoring in tourist areas the current trend is, rather, towards an even greater concentration on the main routes for both road and rail.

Goods Transport: Method and Assumptions

15. Long-distance or inter-urban goods traffic is the one element in transport demand which it is possible to isolate; it is also the easiest to forecast, given an assumption about economic growth, since it is the most closely related to the level of economic activity. In the short term it is changes in the

volume of output rather than in location of industry which have the greatest effect on transport demand. Except for coal and steel, it was not possible to take specific account of possible changes in industrial location. The study suffers from a number of limitations, not least the fact that most of the transport series necessary for establishing a statistical relationship between output and transport are available only for a very short period, from 1952 to 1961. It does however, in our view, give a fair basis for forecasting the likely growth in total demand for long-distance, or inter-urban, transport of goods; and we think it unlikely that any further work at this stage would affect the orders of magnitude we have forecast for freight traffic.

16. It is much more difficult to forecast how this demand will be distributed between road and rail, the main competing forms of transport; but our analysis shows that, while the possible margin of error in our estimates of the road/rail share result in a major uncertainty about the future course of rail traffics, this uncertainty has relatively little effect on our estimates of future road traffic. This is partly because the major part of road traffic is private car traffic and partly because, for general goods transport (other than coal, iron and steel), road transport already carries much the largest share; any increase in this share would not therefore have much effect on the total of road traffic.

17. The study concentrated on road and rail transport, aiming to arrive at total figures for British Railways' receipts from freight traffic on the one hand and forecasts of the total amount of traffic by heavy goods vehicles on the road side. The only other significant volume of inland transport is that carried by coastal shipping, which moved some 20 per cent of the total ton-mileage in 1958. This large ton-mileage consisted, however, of relatively small quantities (only 4 per cent of the total tonnage) mostly carried on long hauls on a few routes. Most of the coastwise traffic is coal and oil, the first decreasing and the second increasing.

18. We have not attempted a quantitative estimate of future growth in transport by pipelines. At the moment they are virtually restricted to the carriage of oil (apart, of course, from gas, water, drainage and sewage pipes), and any forecast of their future development would necessarily be highly speculative. Although there may be some development of the hydraulic transport of coal, it is unlikely that, apart from the carriage of oil, pipelines will contribute much to the total transport picture in the period covered by our study.

19. The calculations for both road and rail traffic were done in terms of ton-mileage. The forecasts for the railways were then translated into estimates for receipts at 1960 prices in order to add them to estimates for passenger transport. Those for road transport were translated into figures for traffic in terms of passenger car units. This is a unit used in road planning studies to allow for the greater demand on road space made by the heavier and slower vehicles. Heavy goods vehicles, buses and coaches are each given a weight of 3; cars, vans and motor cycles a weight of 1. The estimates of railway receipts are for gross receipts, not net receipts, and do not therefore indicate what might happen to the railways' deficit.

Goods Transport: Results

20. The 1980 results for goods traffic in terms of ton-mileage corresponding to our two alternative assumptions about growth in the G.D.P. are shown in the following table. In each case our forecasts are compared with the 1960 level, on the whole a more normal year for industrial demand than 1961. The past figures for each category of goods transport discussed are given in Table 1. Some of these series are estimates and subject to a certain margin of error.* The forecasts for both 1970 and 1980 are given in detail in Tables 2-5. The figures under the headings "Low" and "High" correspond to our lower and higher assumed rates of growth of G.D.P.

Goods transport, 1960 and 1980

	1960	1980 Annual Growth of G.D.P. ⁽¹⁾		Change between 1960 and 1980
		3 per cent through- out	4 per cent after 1966	
	Million ton-miles			Per cent
<i>Coal and Coke</i> by rail ⁽²⁾	7,620	4,960	5,750	— 35 to — 24
<i>Iron and steel materials</i> by rail	2,440	3,040	3,490	+ 24 to + 43
<i>Iron and steel products</i> of which, by rail	2,040	3,000	3,440	+ 47 to + 68
by road	1,160	1,240	1,430	+ 7 to + 23
	880	1,760	2,010	+100 to +128
<i>General goods</i> ⁽³⁾	29,900	50,900	69,900	+ 70 to +134
Assumption A: by rail	6,900	6,900	6,900	—
by road	23,000	44,000	63,000	+ 91 to +174
Assumption B: by rail	6,900	10,200	14,000	+ 48 to +103
by road	23,000	40,700	55,900	+ 77 to +143

⁽¹⁾ See paragraph 9.

⁽²⁾ Revenue ton-mileage only; excludes an estimated 500 million ton-miles of railways' own coal in 1960. By 1980 this will have fallen to an almost negligible level.

⁽³⁾ See paragraph 31 for assumptions.

21. *Coal and Coke.* This traffic still relies heavily on rail transport and will continue to do so. The ton-mileage of coal and coke transported is, however, expected to show a very substantial fall by 1980. The Group have assumed some further decline in coal consumption; our estimates of ton-mileage also make allowance for concentration of production in certain areas, for rationalisation in coal distribution, and for the siting of new power stations near the coalfields. On our more optimistic assumption about economic growth,

* In particular the estimates for road goods transport were made before the results of the Ministry's 1962 Survey of Road Goods Transport were available. The first results of that survey showed that the methods adopted in compiling the statistics used in this report underestimated the growth in road goods transport between 1958 and 1962 by about 1 per cent per annum. This correction would not, however, significantly affect the results of the present study.

rail traffic in ton-miles shows a fall of about one-quarter compared with the 1960 level; our lower estimate for 1980 shows the railways' coal traffic falling by about one-third compared with 1960.

22. There will almost certainly be an increase in the tonnage of coal carried by road, some of this being an increase in despatches by the pits, some of it being as a result of concentration by the railways on a smaller number of coal depots. In total this will not add significantly to the volume of road traffic, but it may cause local difficulties, which might be severe in some areas.

23. *Iron and steel-making materials.* The iron and steel industry, like the coal industry, is a major user of rail transport, and still relies almost entirely on rail for the inland movement of its main materials. On the basis of the Iron and Steel Board's work we have estimated the growth in steel output implied by our alternative assumptions of growth in the G.D.P., and hence transport requirements for the major inputs. The amount of materials available for transport by rail is likely to increase less than total steel production, partly because of the continued shift of production to sites on the coast or near the ore fields, partly because of further progress in integration within the iron and steel industry. But, even allowing for these factors, our calculations show a substantial growth in demand for transport of iron and steel materials. Railway ton-mileage is expected to increase by at least a quarter, and possibly by over 40 per cent, between 1960 and 1980.

24. *Iron and steel products.* The starting point in our calculations here was an estimate for total deliveries of iron castings and finished steel. This we based on our forecast for crude steel output; we had also to estimate the average length of haul to translate these tonnages into estimated ton-mileages. By 1980 the total ton-mileage to be transported is expected to increase by nearly one-half, and possibly by as much as two-thirds, compared with 1960.

25. In this sector, however, it is not possible to assume that the railways will carry the whole of the traffic. The rail share of the total has now fallen to less than a half (see Table 4), and the future split of traffic between road and rail will depend largely on the relative charges and quality of service the railways are able to offer. Apart from offering a faster and more reliable delivery, road transport is widely preferred for some of the industry's light products, which are more easily damaged; and it is these light products which are growing, and are expected to grow, more quickly within the total for finished steel. The Group, therefore, expect that the rail share of total tonnage will continue to decline, though more slowly; this decline could be very considerably slowed down by improvements in service and reductions in railway charges.

26. The best estimates we can make of the future split of this traffic between road and rail imply that the railway ton-mileage of iron and steel products in 1980 may be between 7 and 23 per cent higher than in 1960; the total for road transport in 1980 would be at least double that in 1960. These figures for road transport imply a much slower rate of increase in future as a consequence of our assumption that the transfer from rail to road will be at a slower rate than in the 1950's.

27. *General Goods.* For this last category of goods traffic our calculations of transport demand have been made by attempting to establish, in aggregate terms, a relationship between total transport and industrial output (excluding coal and iron and steel).

28. It is important to stress the very wide variety of commodities and types of service included in this whole category of general goods traffic. One indication of the different type of service offered by road and rail is given by the average lengths of haul for this class of traffic. For the railways it has been steadily increasing in recent years and is now about 135 miles. For road it is only about 20-25 miles; but this figure includes vans, and for purposes of forecasting inter-urban goods transport we have attempted to exclude this very-short-haul traffic by basing our calculations on figures for the heavier goods vehicles, whose growth has been slower than for road transport as a whole.

29. In the early 1950's the average annual increase in the volume of general goods transport was less than half as much as the rise in industrial production; in the last three years, however, there has been a sharp change and transport appears to have increased at much the same rate as production. This change in the relationship between transport and production may, to some extent, reflect a recovery from an abnormally low level of transport activity in the early post-war years, although we do not consider that this is the full explanation. The fact that such changes can occur over quite short periods emphasises the uncertainty surrounding forecasts for this sector of freight transport. In view of this uncertainty the Group has thought it prudent to adopt a range of alternative assumptions within which the ratio of transport to industrial output might lie. This, coupled with our two assumptions for the rate of economic growth, leads us to estimates of an increase in general goods transport by 1980 of between 70 per cent and 134 per cent above the 1960 level.

30. The estimate of the split between road and rail of the total general goods traffic offering presents a further difficulty. Throughout the 1950's general goods traffic by rail fell by about 2% per cent per year, while goods transport by road (excluding vans) rose at an annual rate of 4% per cent from 1952. At first sight, the prospects for road transport are obviously more favourable than for rail, firstly because it is the industries having lighter and more finished goods which are growing fastest, and secondly because recent industrial development has tended to be located at sites which are more conveniently served by road.

31. But a simple extrapolation of the railways' past trend is not plausible; this leads to the eventual disappearance from the railways of all general goods traffic. The measures proposed by the railway management are designed not only to halt past trends but to reverse them; they are confident of success, but to what extent they will have to cut prices as well as improve service, is not yet known. With all these considerations in mind, the Group has adopted as its most unfavourable (for the railways) assumption that there will be no increase in rail traffic compared with 1960 and that the whole of the future increase falls to road transport: we call this Assumption A. On the optimistic side (again for the railways) we have assumed that, although the

rail share continues to decline over the next few years, modernization and rationalization will enable them thereafter to improve their competitive position and take an equal share with road transport in the growth of traffic: we call this Assumption B. Taking our upper figure for the total volume of general goods traffic and for the railways' share of the total, this could lead to a doubling in the railways' general goods ton-mileage by 1980. This wide range, from no change compared with 1960 to a doubling, illustrates the great uncertainty of the railways' prospects in this field.

32. On the roads side, our estimates for this category also show a wide range, with prospective increases in the ton-mileage ranging from 77 per cent to 174 per cent compared with 1960. The upper estimate, which assumes a faster growth in the economy, a continued rapid expansion in transport of goods and a further increase in road transport's share of the total, implies a rate of future growth very similar to that experienced by road goods transport over the last ten years.

Passenger Transport

33. The Group found it much more difficult to make any satisfactory forecasts of possible future trends in passenger traffic, whether by private or public transport. While we have reasonable confidence in the process of establishing technical relationships between changes in goods transport and the output of industries generating demand for transport, and while this method might be employed to forecast changes in business expenditure on passenger transport, the greater part of expenditure on passenger transport arises from personal decisions on the part of the consumer, and forecasts of changes in social habits cannot be related in any simple way to growth in the total population or in the national product.

34. Expenditure on passenger transport depends, for example, to some extent on changes in personal incomes and how people choose to spend those incomes—whether they spend more on travel or more on television sets. It also depends on the transport facilities they are offered, on how easy and convenient it is to travel by public transport as opposed to private transport: this may be particularly important in urban areas. It also depends on the charges made by public transport relative to the cost of motoring and how the prices of both public and private transport change compared with prices of other consumer products. The relative levels of prices may be affected, not only by technical changes, but also by Government action, such as changes in taxation.

35. A full exploration of all the factors affecting future development of passenger transport in both urban and inter-urban areas was beyond the resources of the Group. Many of the data and even the techniques needed for exploring them have not yet been developed. It has, however, been possible to make some very simple projections for travel by each of the main forms of passenger transport outside urban areas as a complement to our study of goods transport. Beyond this, the Group suggest in paragraphs 73-79 below some further studies which might be undertaken and propose the collection of further data which would enable these forecasts to be developed further.

36. We considered inter-urban passenger transport under three main headings:—

- (i) the ownership of private cars and their usage outside urban areas; we have excluded travel by private car in urban areas because we believe that, in the larger cities at least, the use of private cars is already conditioned by capacity limitations;
- (ii) public transport by rail, excluding season-ticket travel (taken as representing trends in commuter travel);
- (iii) inter-urban journeys by bus and coach.

37. What the study has covered, therefore, is effectively all passenger travel by both rail and road except in the larger cities. These projections lead to estimates for total British Railways' passenger receipts, since almost the whole of their receipts arise from inter-urban traffic. The estimates for passenger travel by road were translated into estimates for road traffic, which, like the goods traffic estimates presented above, effectively cover all road traffic outside the larger towns. We also examined air traffic and found that, except for a limited number of routes, air traffic is not expected to account for a significant proportion of total passenger transport; the main routes on which air traffic is significant are, however, important and profitable railway routes.

38. *Private car ownership and usage.* There is virtually no information yet available on the usage of private cars, which is what is relevant to demand for roads, and we have had to consider first the problem of growth in ownership of cars. There have been a number of approaches to this problem, the best documented being those by the National Institute of Economic and Social Research and the Road Research Laboratory. These two studies approach the problem from different points of view.

39. The National Institute's study was not primarily concerned with the number of cars on the road, but with a closely related variable called "car stock"; this is defined as the money value of all the cars on the road, a measure which is affected by changes in the average size and age of cars, as well as by their numbers. The study showed that, since 1948, the percentage change in car stock from one year to the next has been quite closely related to the percentage change in average personal income (after tax), but, over the whole period, the car stock has increased at a faster rate than incomes. In fact, for each 1 per cent rise in income there was a 2.4 per cent rise in car stock and, added to this, there was a rise in car stock quite independent of income of about 3 per cent per year.

40. The Road Research Laboratory's study on the other hand did not rely at all on the growth in incomes; the use of a relationship with incomes was considered but rejected, and the Laboratory's forecast consisted, in effect, of projecting the past trend so that the rate of increase diminished and eventually ceased at a final "saturation level". The "saturation level", that is, the level of car ownership at which the number of cars per head would stop growing, was estimated from a relationship between current rates of growth and present figures for numbers of cars per head in different parts of the U.K., supported to some extent by American data.

41. The Group thinks that, in the short term at least, any estimate should be related to a specific assumption about incomes and about the price of motoring, if the forecasts in private cars are to be consistent with the other estimates we have made. One other approach to forecasting growth in motoring was also explored by the Group. It examined the implications of various assumptions about car ownership for total consumer expenditure on motoring, and examined the credibility of the resultant figures for consumers' expenditure on motoring as a proportion of total consumer spending, comparing them with American figures at comparable levels of income per head.

42. The result of examining all these methods lead us to suggest that, by 1970, the car fleet may be in the range of 12-13 million compared with a present (1962) figure of 6½ million. Beyond 1970, we think it particularly difficult to forecast; by then, it may be that the growth rate will slacken off, that is, that the past relationship between incomes and car ownership will change. Opinions differ, however, on whether the assumption of such a slowing down in the growth rate is plausible and, if it is, at what point it will occur. For predicting the 1980 level of road traffic, we have adopted a figure of 16-18 million for 1980, the upper figure being close to the Road Research Laboratory's forecast for that year. (This is roughly equivalent to a figure of one car per family, but of course it implies some families with more than one car, others still without a car.)

43. These estimates all assume no very marked change in the prices of cars relative to other consumer prices, whether as a result of tax changes or other price movements. The recent reduction in purchase tax would, we think, have no significant effect on our estimates for 1980, though such a reduction might result in the levels we have forecast for 1970 being reached a little earlier.

44. One other qualification attaches to our estimates. We have assumed that urban congestion, which already limits the use of cars in the larger urban areas and will, on present plans, continue to do so up to 1980, will not limit the spread of car ownership or of motor car usage outside the larger towns,

45. The only data on the usage of private cars so far available are derived from traffic counts. These suggest that mileage per vehicle has remained more or less stable during the last ten years. Future intensity of usage seems likely to be affected by conflicting influences. On the one hand, growth in the number of two-car households may be tending to reduce the average; on the other hand, increasing reliance on personal transport as part of the normal pattern of life will probably tend to increase it. Two alternative assumptions about average usage, one of a decrease of 10 per cent, the other of an increase of 10 per cent, have therefore been considered in order to indicate the range within which total private car traffic might lie.

46. We have then combined our lower estimates of both numbers of cars and of average intensity of use to obtain what we consider gives a minimum estimate of the likely growth by 1970 and 1980. At the other extreme we have obtained a maximum likely figure by combining our upper estimates of

the size of the car fleet and average usage. The assumption of a decrease of 10 per cent in average mileage per car by 1980, combined with our lower figure for the number of cars on the road (16 million) implies that total private car mileage outside urban areas will increase at an annual rate of 4.8 per cent over the whole period to 1980. If a 10 per cent increase in utilisation occurs and the number of cars reaches our higher estimate of 18 million, car traffic will increase by 6½ per cent a year during the period. This latter figure is closer to current trends which, since 1958 (the earliest year for which detailed figures are available) have shown an increase of 9 per cent per annum. Both our upper and lower estimates assume that the growth in the next few years will be faster than the average over the whole period 1960-1980, and will then slow down. By about 1970, they imply that private car traffic will already be about double the 1960 level.

47. *Passenger travel by rail.* For this purpose we have examined the figures for passenger journeys, passenger miles and passenger receipts by British Railways, excluding commuter travel, which we have taken as being represented by the trend in season tickets. (Season-ticket travel accounted in 1960 for £21 million out of British Railways' total passenger receipts of £151 million; for a first estimate of total railway receipts we have thought it reasonable to assume that the recent upward trend in season-ticket travel continues, and have made a simple projection for that trend to 1980). For other passenger travel, which accounts for £130 million out of the railways' total receipts of about £470 million, we have found it very difficult to interpret the trend in the figures since 1950.

48. For most of the 1950's the trend of passenger mileage by rail was steadily, if slowly, upwards. But the figures from 1957 are very erratic, and a number of different factors (petrol rationing during the Suez crisis, the unusually good weather in 1959, a series of fares increases) have been at work, and their effect is difficult to disentangle. The recent trend does not therefore offer very clear guidance for the future; at best it suggests little or no change in total.

49. It seemed to us, however, important to examine the possible effect of changes in the pattern of rail services that will be available for use by the public, insofar as this is at all possible in advance of completion of the Railway Board's plans. The general line of the railways' thinking has been suggested in speeches of the Chairman of the Railways Board, which enable some forecasts to be made of the effect of rationalization and of modernization of services.

50. Some 40 per cent of the total mileage run by passenger trains is stopping services (excluding suburban services which are part of the urban transport pattern). It is these services which are most unprofitable to operate. It is unlikely, however, that these services account for as much as 20 per cent of passenger travel by rail, even allowing for their contributory effect to other services. Moreover, their withdrawal would not necessarily mean a complete loss to rail of all passengers using them, as a proportion would continue to use main line services as alternatives or for part-journeys. Even cutting out half of these stopping services by 1980 would be unlikely to reduce rail

passenger mileage by as much as 10 per cent, though it must be admitted that this is only a very rough estimate.

51. The other half of the railways' plan is the intention to improve the remaining services in speed, frequency and comfort, the result of which may be to bring increasing patronage sufficient to offset the traffic lost on discontinued services. The results of modernization schemes already carried out support this assumption. However, competition from air over the longer distance and from both coach and private car, on the motorways and other new roads, is certain to intensify, and the rail improvements envisaged in the long term will probably do no more than enable the present share of long-distance traffic to be maintained. Population growth may add some 10 per cent to the traffic available; and the gains may therefore be of much the same order as the loss from service withdrawals suggested above.

52. All this tends to confirm our view that the present inter-urban rail movement of some 16,000 million passenger miles per annum is unlikely to change appreciably. This is on the assumption of no significant change in the cost of rail transport relative to other prices. Rail fares have now caught up with the general rise in retail price levels; and the response of rail carryings to price changes in recent years suggests that there is very little room for further increase without provoking resistance of an order which so reduces passenger journeys that receipts are not likely to rise.

53. *Public road transport.* There are two components of inter-urban public road transport: long-distance coach services and stage services between towns. Express coach services, which comprise some 10 per cent of the total passenger mileage outside towns, and excursions and tours (about another 10 per cent), are tending to increase. Their service is improving with the development of better inter-urban road facilities; and they offer a considerable advantage in lower fares compared with rail, although this advantage may be eroded by an improvement in main line rail services.

54. The stage services, which are increasingly feeling the effect of private car competition, are declining in number and usage and, as private car ownership becomes more widespread, this decline can be expected to continue, with probably only slight gains from the closure of lightly trafficked railway services.

55. In total, for both classes of traffic, projections of current trends suggest a fall of about one-quarter by 1980 to a little under 20,000 million passenger miles; we have assumed that total vehicle mileage run by public service vehicles on inter-urban services will fall by the same amount.

56. *Total passenger traffic.* We have, as we have already stressed, much less confidence in our ability to predict the future of passenger travel, even between towns, than in our goods forecasts. It does, however, seem certain that the main trend of the last ten years—public inter-urban transport by both road and rail losing ground to the private car—is likely to persist up to 1970. There seems no basis for suggesting that the same general trend will not continue during the 1970's. The actual rate of development of private car traffic in the longer term is difficult to predict, but we think that it may be slower than in the 1960's.

Summary

57. The results of all our calculations for both goods and passenger transport are here summarised in a form which brings together the forecasts for railway receipts on the one hand, and for road traffic on the other. The full figures for 1970 and for 1980 are given in Tables 7 and 8.

58. *Railway receipts.* We have summarised the railway figures in terms of receipts at constant prices, the only possible way of adding together the different categories of traffic. In addition to traffic by freight train discussed in detail above, we have included an estimate for future receipts from freight carried by coaching train (parcels and mails traffic). This traffic, for which no measure of volume is available, has shown a substantial increase in receipts during the 1950's, although the growth has recently been less rapid.

Estimated total Railway Receipts

£ million at 1960 prices

	1960	1980 Annual Growth of G.D.P. ⁽¹⁾	
		3 per cent throughout	4 per cent after 1966
Coal and coke	109	71	82
Iron and Steel traffic:			
Materials	33	42	48
Products	16	17	20
Total	49	59	68
General Goods ⁽²⁾			
Assumption A	102	102	102
Assumption B		150	206
Total freight train traffic:			
Assumption A	261	232	252
Assumption B		280	356
Parcels, mail, etc. by coaching train	56	60	65
Passenger receipts ⁽³⁾	151	150	
Total:			
Assumption A	468	442	467
Assumption B		490	571

⁽¹⁾ See paragraph 9.

⁽²⁾ See paragraph 31 for assumptions.

⁽³⁾ See paragraphs 47-52

The 1980 figures are estimates at 1960 prices, but our estimates for freight traffic have in fact assumed some improvement in the railways' competitive position. Insofar as this has implied a reduction in railway rates relative to other prices, this would mean some reduction in the railway receipts figures below those we have shown here.

59. At 1960 levels of charges, the forecasts we have made for total railway receipts range from a reduction of £26 million (6 per cent) to at most an increase of £103 million (22 per cent). Despite the crudity of our estimates we

feel fairly confident in stating that a larger increase in railway receipts is unlikely.

60. We should, of course, stress again the tentative nature of our estimates. As we have already explained, the passenger estimate is no more than a notional figure. But it seems to us that it is the size of the future market for freight transport which is of greatest importance to the railways and is also open to the greatest doubts. In particular, we return again to the points we have already made above about the uncertainty for general goods traffic. In the forecasts included here the range for general goods receipts is from £102 million (with 3 per cent rate of economic growth and with an assumption of no further decline in the railways' traffic) up to £177 million, an estimate which assumes a higher rate of economic growth and an improvement in the railways' competitive position which enables them to share equally with road transport in that rate of growth. This second assumption would imply an actual reversal of a trend that has now gone on since the early 1950's. Even our more pessimistic assumption implies an increase in both ton-mileage and receipts compared with the present, 1962, level, since traffics have continued to fall in the last two years.

61. The railways' own freight study, the first results of which were recently published, explored the potential market for all freight traffic other than coal, that is, iron and steel materials and products, and what we have called general goods. Our own estimates for receipts from the whole of these traffics range from a figure very close to the 1960 level to one which is more than 80 per cent higher than in that year. The railways' study has not so far examined the possible future growth of traffic, but has been concerned to show how much of the traffic not now going by rail is potentially suitable rail traffic. Their reports on their survey suggest that there already exist some 90 million tons of merchandise and minerals traffic which is "inherently suitable for rail", and have mentioned the possibility of capturing some 50 million tons of this freight at an average receipt of £2 a ton. This possible gain of £100 million in receipts is not far short of our estimate of the increase in receipts (from freight traffic other than coal) that would result by 1980 if all the most optimistic assumptions adopted by the Group were realised.

62. *Road traffic.* The various estimates we have made for road transport are summarised in the following table. We have also included figures for the small categories of vans and motor cycles, but these are rough estimates used solely for the purpose of arriving at projections of total traffic.

Traffic on Inter-Urban Roads

	Traffic in 1960 (thousand million passenger car unit ^(a) miles)	Average annual percentage change		
		1959 to 1961	1960 to 1970	1970 to 1980
Cars and taxis ...	21.0	+ 8.9	+6.8 to +8.8	+2.8 to +4.2
Motor cycles, etc. ...	1.9	- 4.3	-0.5	-0.5
Buses and coaches ...	2.9	+ 1.6	-1.4	-1.4
Heavy goods vehicles ...	11.0	+ 4.8	+3.1 to +4.8	+2.6 to +5.3
Vans ...	3.4	+ 8.1	+3.0 to +3.3	+3.0 to +4.0
All motor vehicles ...	40.2	+ 6.6	+4.8 to +6.5	+2.5 to +4.2

(a) See paragraph 19.

The range between the upper and lower figures shown is due largely to the alternative assumptions about the growth of G.D.P. and to the result of introducing alternative assumptions about motor car ownership and usage. It is also affected by the uncertainty of the forecast for the total volume of goods traffic available and by our alternative estimates for the road/rail share; yet another uncertainty is that, by assuming that the growth in goods vehicle mileage will be the same as the increase in the ton-mileage transported, we may have failed to take account of possible increases in load factors of goods vehicles. But all these uncertainties about goods traffic are very small in their effect on total road traffic compared with the effect of our two alternative estimates for private cars.

63. Combining the extremes for each class of traffic leads us to estimates of an average rate of increase in total traffic over the whole period 1960-1980 of between 3.7 and 5.4 per cent per annum. The higher figure is close to the 5 per cent per annum rate of growth now being assumed for road planning purposes.

64. We expect, however, a much faster rate of growth up to 1970 than in the following decade, when we have assumed that there will be a marked slowing down in the rate of increase of the car population. Our estimates for 1970 show that total traffic will already be between 60 and 90 per cent higher than in 1960. The upper estimate is equivalent to an average annual increase in total traffic between 1960 and 1970 of 6.5 per cent, almost the same as the increase actually experienced in the last four years and significantly higher than the planning figure of 5 per cent per annum.

65. The rate of growth during the 1970's is more uncertain: our estimates suggest a continued expansion of goods traffic, but the slower increase in car traffic is responsible for a flattening out of the growth of total traffic to between 2.5 and 4.2 per cent per annum. Even so, the volume of total traffic in 1980 is expected to be twice as large as in 1960, and perhaps nearly three times as great.

THE URBAN PROBLEM

66. It is common experience that urban areas are already characterized by the high level of traffic, by the congestion which slows down the movement of road traffic and by the costs in terms of the destruction of amenity and environment imposed on those living and working there. This situation arises from the volume of road traffic in relation to the road system available. This traffic is composed partly of vehicles delivering and collecting goods, partly of buses and partly—but in recent years to a steadily greater extent—of private cars, which since the war have become far more widely used. Commuters who use private cars for travel to and from work impose particular loads on the road system, because in the first place they all travel at much the same time and in the second place they tend, if unchecked, to park their cars at the kerbside, with the result that the road space available for movement is restricted throughout the day. There is no accepted measure of road congestion, but hardly anyone would deny that it is a serious problem. The Group considers that the full implications of the prospective increase in car use (para. 46 above) are not yet fully appreciated. Quite small additions to an

over-loaded system can produce disproportionate damage. To double or treble the load will entail consequences which we cannot predict in detail: but we have no doubt that they will be very unpleasant. It is perhaps adding nothing to what is generally known, when the Group says that this is the most serious problem in the field of transport, but we do not think that the urgency is nearly widely enough understood.

67. The Group is aware that the road programme is steadily expanding, and is increasingly being devoted to urban schemes. Even allowing for this, the money available for such developments in urban areas is insufficient to permit the necessary work to be carried out very quickly. So, unless there is a further sharp increase in the funds for highway developments in urban areas or such development can efficiently be combined with measures to regulate the demand for road space, the Group fears that the programme will be so spread out that conditions in many urban areas will get much worse before redevelopment has any effect.

68. As mentioned in paragraph 6, no systematic studies have yet been completed either of the transport situation in the cities in the United Kingdom or of the economic problems of urban areas in general. Nor has the Group itself been able to take a close look at the urban problem. A comprehensive study of the London conurbation is now under way in the form of the London Traffic Survey: the scope of this study is not limited to the collection of data about transport, but embraces investigation of the determinants of transport users' requirements for transport services. As a result it should be possible to bring such factors as changes in employment, population, residential patterns, etc., into account in making forecasts of transport needs. A somewhat less ambitious survey is being made in the Merseyside conurbation. Surveys in the other conurbations are now under consideration.

69. The Group has noted that an Inter-departmental Working Party on Traffic, Highways and Urban Development and an associated group under the aegis of the Road Research Laboratory are studying the problem of traffic in towns and the methods by which it might be tackled in the shorter term over the next decade or so. The Group has also taken note in general terms of the work of Mr. C. D. Buchanan and his team, whose task is the evolution for the longer term of an approach to city planning which will reconcile the desiderata of environment and communications.

70. While it is an oversimplification to talk of "the urban problem", since each area in fact presents a different problem from the next one, to some extent areas can be grouped according to their size. Small and medium-sized towns can be adapted to a considerable increase of traffic without massive rebuilding and replanning of the town itself. Much investment in new roads may be required, but some of these new roads can be built away from the town centres, so that the cost and planning difficulties are less. With large towns the cost and planning difficulties of coping with a large increase of traffic are likely to be very great. The building of new roads will normally involve much demolition and the replanning of the town on a large scale. Such building takes a long time, though the heaviest increases in car ownership are expected to take place in the next few years. The Group think it unlikely, in any case, that in a country so densely populated as Britain rebuilding can be a full solution.

71. The availability in certain cities of a rail network for internal and suburban passenger movement is the most hopeful feature of the situation. Rail transport in the cities which have it is an asset which should not be lightly eroded. Firstly, railways already have rights of way, which are difficult to acquire in built-up areas. Secondly, they are on occasion capable of moving very large numbers of people in relation to the track required. The Group has noted that there is in some cases a threat that railway lines, which as part of their function serve commuter or other urban traffic, may be closed. The Group considers that this could prove an unfortunate decision and that proposals of this kind should be carefully examined. A different problem is taking shape in the London area. The rapid growth of employment, particularly in central London, coupled with a reduction in the resident population in the area within the Green Belt, is throwing an increasingly heavy load on the railways. Developments to the existing system, short of major new capital works, could provide capacity to meet the increased load over the next few years. But, if the trend continues, very expensive major works will be needed. At the same time, facilities in the form of bus and Underground services for distributing arrivals at the main-line termini are also being strained. The construction of the Victoria Line, on which work has just started, is expected to make a considerable difference to the problem of peak loads; but additional facilities may be needed if commuting continues to increase.

72. In general, the urban problem will have to be tackled partly by the expenditure of larger amounts of money than hitherto and partly by regulation of traffic, especially of the use of the private car. The Group cannot yet make recommendations about the appropriate scale of investment nor suggest the ways in which effective traffic regulation should be achieved. But the most efficient allocation of available road space, as a generally accepted objective, might be approached by administrative action, by the use of the pricing mechanism or by a combination of both. Administrative action might take the form of parking prohibitions, the exclusion of certain types of traffic from certain streets at particular times, or subvention of classes of traffic, such as public service vehicles. Under the heading of the pricing mechanism one may include parking charges, which are already widely applied to kerbside and off-street parking in London and to some extent elsewhere, and charges for the use of road space assessed on moving vehicles by the use of meters, electronic scanners, stickers, etc. A good deal of experience is being obtained, mostly in London, and the Group think that as much experiment as possible should be made. But further research into the economics of urban traffic and the possibilities of applying any suggested solutions is needed (see para. 78 below).

GENERAL REMARKS AND SUGGESTIONS FOR FURTHER WORK

73. The two fundamental problems which face the Ministry seem to the Group to be these:—

- (a) What level of investment is called for in transport as a whole? How should this be divided between road and rail? And how should road investment be divided between urban and inter-urban roads?
- (b) How should the growing traffic problem of towns and cities of varying sizes be tackled?

The problem of the place of transport in regional planning and its relation to economic growth in particular areas is also assuming importance.

74. To provide a better understanding of the economic factors involved in both problems, and as a basis for future policy decisions, the Group considers that further work and research is necessary in three broad fields:—

- (1) development of improved criteria for investment planning;
- (2) study of the nature of transport demand: how it arises and the factors influencing its distribution between forms of transport;
- (3) study of the costs incurred by transport operators.

75. A better and wider understanding of the value to the economy of investment in transport is essential, because it is through investment that the Government exercises the greatest measure of control over transport development. Criteria for investment planning need refinement, firstly within the fields of road and rail investment taken separately, secondly with the object of allocating resources correctly between road and rail, and thirdly to provide guidance on the desirable level of investment in transport as a whole. The Group is aware of the work being done by the Ministry to improve procedures for allocating the funds available for road investment and to relate priorities to economic benefits. They support the Ministry's proposals for commissioning, jointly with the British Transport Commission, further studies on the application of consumer benefit techniques to railway projects. There is scope for more research, both theoretical and on particular projects.

76. Some calls on the transport system are rigidly linked with particular industrial and residential developments. If a factory is built, raw materials have to be brought to it, and the final product taken away. Again, if a school serves several residential districts, a definite need for transport is set up. It is clearly important to study such needs, the factors which determine them, the different ways in which they can be satisfied, and the factors which influence people's choice between different modes of transport. Such studies are also useful in framing town planning policy. Other calls on the transport system depend much more on the transport facilities and standard of service available. Increasing car ownership has enabled many journeys to be made which were not made before. Whether some car journeys are made depends on road conditions or the ease or price of parking. A fast train or air service induces journeys otherwise not made. There are also intermediate cases. A factory or office development will certainly produce "journeys to work" and the consequent transport requirements close to it. But the length of these journeys will depend partly on the facilities offered. A deeper understanding on these many complicated factors influencing the use of transport systems and the choices between them would be most helpful in deciding on the location and extent of investment in transport. A good deal of information will be provided by the London Traffic Survey and other surveys. Co-ordination of work in this field and further research is well worthwhile.

77. At present little is known about the cost of transport operators. They are very relevant to any consideration of how transport demand can be met with least call, in any given circumstances, on economic resources. This information would give further background to investment decisions. The European Economic Community has recognised the potential value of work in this field.

78. Quite apart from the work being done by the Inter-departmental Working Party on Traffic, Highways and Urban Development, and by the Group under Mr C. D. Buchanan (see para. 69 above), the development of solutions to the urban problem calls for further study of the economics of urban traffic. Road users inflict costs on each other: the costs of congestion. Moreover, an extra journey in a congested system may inflict costs on very many other road users. These are likely to be, in total, very much more than the cost borne by the person making this journey. Thinkers about this are agreed that costs of congestion are substantial, and that they may have an important application in the problems of charging for road space. Calculations of this type have so far necessarily been made on a number of arbitrary assumptions; refinement of the techniques would be valuable. The results of the work being done by the Group under the aegis of the Road Research Laboratory will be of interest in themselves and may point the way to further desirable research.

79. We have not attempted to define particular research projects within the fields we have outlined above. Such projects should be developed against the programme of work of the Ministry as a whole. They would almost certainly call for the use of additional resources from outside the Ministry and we welcome the steps that are being taken to bring economists in the academic world, and other interested people outside the Ministry, into closer collaboration on the economic background to policy decisions.

*Ministry of Transport,
London, S.E.1.
February, 1963.*

Table 1

Estimated ton-miles of road and rail freight transport⁽¹⁾

Thousands million ton-miles

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
RAIL										
Coal and coke	10.4	10.7	10.5	10.2	10.2	9.9	8.9	8.0	8.1	7.7
Iron and steel:										
Materials	2.4	2.5	2.4	2.5	2.6	2.5	2.0	2.1	2.4	2.1
Products	1.1	1.2	1.1	1.1	1.2	1.2	1.0	1.0	1.2	1.0
Total	3.5	3.7	3.5	3.6	3.8	3.7	3.0	3.1	3.6	3.1
General Goods:										
Other minerals	2.8	2.8	2.7	2.6	2.6	2.6	2.3	2.2	2.4	2.2
Other merchandise	5.7	5.6	5.4	5.0	4.8	4.7	4.2	4.4	4.5	4.6
Total	8.5	8.4	8.1	7.6	7.4	7.3	6.5	6.6	6.9	6.8
Total rail	22.4	22.8	22.1	21.4	21.4	20.9	18.4	17.7	18.7	17.6
ROAD										
Coal direct from pits	0.5	0.5	0.6	0.8	0.8	0.8	0.8	0.8	1.0	1.0
Iron and Steel products	0.4	0.4	0.5	0.7	0.6	0.6	0.6	0.7	0.9	0.8
General goods, excluding vans	16.4	16.8	17.4	18.4	18.5	18.3	20.4	21.8	23.0	24.1
Vans	1.0	1.0	1.0	1.2	1.2	1.1	1.3	1.5	1.7	1.9
Total road	18.3	18.7	19.5	21.1	21.1	20.8	23.1	24.8	26.6	27.8
ROAD AND RAIL										
Coal, excluding local road delivery	10.9	11.2	11.1	11.0	11.0	10.7	9.7	8.8	9.1	8.7
Iron and steel traffic	3.9	4.1	4.0	4.3	4.4	4.3	3.6	3.8	4.5	3.9
General goods excluding vans	24.9	25.2	25.5	26.0	25.9	25.6	26.9	28.5	29.9	30.9
Vans	1.0	1.0	1.0	1.2	1.2	1.1	1.3	1.5	1.7	1.9
Total road and rail	40.7	41.5	41.6	42.5	42.5	41.7	41.5	42.6	45.3	45.4

⁽¹⁾ See footnote to paragraph 20.

Sources: British Transport Commission

Ministry of Transport departmental estimates

Table 2

Coal

(i) Summary of past changes

	Average 1952-54	1960	Average annual percentage change
Total despatches of coal available for transport from pits and opencast sites (million tons) ⁽¹⁾	194	182	-0.9
<i>Rail traffic</i>			
Total revenue carryings of coal and coke (million tons) ⁽²⁾	173	148	-2.2
Average length of haul (miles)	56	52	
Estimated revenue ton miles (million)	9,790	7,620	-3.6
<i>Road traffic</i>			
Coal despatched from pits and opencast sites by road (million tons) ⁽¹⁾	26	38	+5.6

Sources: Ministry of Power *Statistical Digest*.British Transport Commission *Annual Report and Accounts*.

Ministry of Transport departmental estimates.

(ii) Forecasts of future rail traffic ⁽²⁾

	1970		1980		Average annual percentage change			
	Low	High	Low	High	1960-1970		1970-1980	
Total revenue carryings of coal and coke (million tons) ⁽¹⁾ ...	134	141	118	137	-1.0	-0.5	-1.2	-0.3
Average length of haul (miles) ...	47	47	42	42				
Estimated revenue tons miles (million)	6,300	6,630	4,960	5,750	-1.9	-1.4	-2.4	-1.4

⁽¹⁾ Excluding colliery consumption, miners' coal and the railways' own consumption.⁽²⁾ See paragraph 21.

Table 3

Iron and steel: principal materials

(i) Summary of past changes

	Average 1952-4	1960	Average annual percentage change
<i>Consumption (million tons)</i>			
Iron ore	26.8	33.2	+ 3.1
Limestone, dolomite, etc.	4.6	6.1	+ 4.1
Scrap	7.4	9.9	+ 4.3
Pig Iron ⁽¹⁾	4.8	4.6	- 0.6
Semi manufactures	8.3	12.1	+ 5.4
Total of above	51.9	65.9	+ 3.5
<i>Rail carryings (million tons)</i>			
Iron ore	16.0	18.0	+ 1.7
Lime and limestone ⁽²⁾	7.1	8.1	+ 1.9
Scrap	6.6	6.8	+ 0.4
Pig iron	4.0	3.1	- 3.6
Semi manufactures	5.0	5.2	+ 0.6
Total of above	38.7	41.2	+ 0.9
Assumed average length of haul (miles) ...	62	60	
Estimated rail ton miles (million)	2,420	2,440	+ 0.2

Sources : *Iron and Steel Annual Statistics*

British Transport Commission

Ministry of Transport departmental estimates.

(ii) Forecasts of future rail traffic ⁽³⁾

	1970		1980		Average annual percentage change			
	Low	High	Low	High	1960-1970		1970-1980	
<i>Rail carryings (million tons)</i>								
Iron ore	23.4	24.4	27.7	31.8	+2.7	+3.1	+1.7	+2.7
Lime and limestone ⁽²⁾	10.7	11.2	13.3	15.3	+2.8	+3.3	+2.2	+3.2
Scrap	7.0	7.3	7.3	8.4	+0.3	+0.7	+0.4	+1.4
Pig iron	2.1	2.2	1.9	2.2	-3.8	-3.4	-1.0	0.0
Semi manufactures	5.1	5.3	5.0	5.7	-0.2	+0.2	-0.2	+0.7
Total of above	48.3	50.4	55.2	63.4	+1.6	+2.0	+1.3	+2.3
Assumed average length of haul (miles)	57	57	55	55				
Estimated rail ton-miles (million)	2,750	2,870	3,040	3,490	+1.2	+1.6	+1.0	+2.0

⁽¹⁾ Excluding hot metal.⁽²⁾ Total carryings for all purposes.⁽³⁾ See paragraph 23.

Table 4

Iron and steel: finished products

(i) Summary of past changes

	Average 1952-54	1960	Average annual percentage change
Deliveries of iron castings and finished steel (million tons)	17.5	22.7	+3.8
Assumed average length of haul (miles)	90	90	
Estimated total ton miles (million)	1,580	2,040	+3.8
<i>Rail traffic</i>			
Revenue carryings of iron and steel products (million tons)	9.9	9.7	-0.3
Assumed average length of haul (miles)	116	120	
Estimated revenue ton miles (million)	1,155	1,160	+0.1
<i>Road traffic</i>			
Estimated ton miles (million) ⁽¹⁾	425	880	+11.0

Sources: *Iron and Steel Annual Statistics*.
 British Transport Commission.
 Ministry of Transport departmental estimates.

(ii) Forecasts of rail and road traffic⁽²⁾

	1970		1980		Average annual percentage change			
	Low	High	Low	High	1960-1970		1970-1980	
Deliveries of iron castings and finished steel (million tons) ...	26.9	27.9	33.3	38.2	+1.7	+2.1	+2.2	+3.2
Assumed average length of haul (miles)	90	90	90	90				
Total ton miles (million) ...	2,420	2,510	3,000	3,440	+1.7	+2.1	+2.2	+3.2
<i>Rail traffic</i>								
Revenue carryings (million tons)	9.4	9.8	10.0	11.5	-0.3	+0.1	+0.6	+1.6
Assumed average length of haul (miles)	122	122	124	124				
Revenue ton miles (million) ...	1,150	1,200	1,240	1,430	-0.1	+0.3	+0.8	+1.8
<i>Road traffic</i>								
Ton miles (million) ⁽¹⁾ ...	1,270	1,310	1,760	2,010	+3.8	+4.1	+3.3	+4.3

⁽¹⁾ Total ton miles *minus* rail ton miles.

⁽²⁾ See paragraphs 24 to 26.

Table 5

General goods traffic

	Average 1952/4	1960	1970		1980		Average annual percentage change			
			Low	High	Low	High	1952/4 to 1960	1960 to 1970 Low	1970 to 1980 Low	1970 to 1980 High
Gross domestic product (constant factor cost)	—	—	—	—	—	—	+2.9	+3.0	+3.0	+4.0
Manufacturing output (constant prices)	—	—	—	—	—	—	+3.8	+3.9	+3.9	+5.2
General goods traffic; ⁽¹⁾ total (thous. million ton-miles)	25.2	29.9	39.0	44.2	50.9	69.9	+2.5	+2.7	+2.7	+4.7
<i>Rail/road shares⁽²⁾</i>										
Assumption A: Railway traffic remains at 1960 level	8.3	6.9	6.9	6.9	6.9	6.9	-2.6	—	—	—
Rail (thous. million ton-miles) ...	16.9	23.0	32.1	37.3	44.0	63.0	+4.5	+3.4	+3.2	+5.4
Road (thous. million ton-miles) ...	33	23	19	17	15	12	—	—	—	—
Rail share (per cent)... ..	...	...	...	...	...	...	...	...	...	...
Assumption B: Railway share does not fall below 20 per cent	8.3	6.9	7.8	8.8	10.2	14.0	-2.6	+1.2	+2.7	+4.7
Rail (thous. million ton-miles) ...	16.9	23.0	31.2	35.4	40.7	55.9	+4.5	+3.1	+2.7	+4.7
Road (thous. million ton-miles) ...	...	...	...	...	...	...	...	...	...	...

⁽¹⁾ See paragraph 31 for assumptions.⁽²⁾ Excluding vans.

Table 6

Estimated total passenger miles by rail and road in Great Britain

Thousand million passenger miles												
	1950	1951	1952	1953	1954	1955 ^(a)	1956 ^(a)	1957 ^(a)	1958 ^(a)	1959	1960	
RAIL												
British Railways ...	20.0	20.6	20.5	20.6	20.7	20.3	21.1	22.6	22.2	22.3	21.5	
Of which:												
Season tickets	—	—	3.8	3.8	3.6	3.5	3.8	4.1	4.8	4.9	4.9	
Other ...	—	—	16.6	16.8	17.1	16.8	17.3	18.5	17.4	17.4	16.7	
London Transport	3.9	3.7	3.6	3.5	3.5	3.5	3.4	3.3	3.3	3.2	3.2	
Total rail ...	23.9	24.3	24.1	24.1	24.2	23.8	24.5	25.9	25.5	25.5	24.8	
ROAD												
Buses, coaches, etc.	50.2	50.9	50.1	50.7	50.0	49.8	48.6	45.9	43.4	44.1	43.9	
Of which:												
Mainly urban ^(b)	23.7	23.2	22.7	22.5	21.8	21.2	21.0	20.1	18.0	18.4	18.3	
Mainly rural ^(b)	26.5	27.7	27.4	28.3	28.2	28.6	27.6	25.8	25.4	25.8	25.7	
Cars, taxis and motor cycles ^(c)	28.8	33.6	35.1	38.3	42.4	48.0	51.7	51.3	61.5	69.1	74.8	
Total by public transport	74.1	75.2	74.2	74.8	74.2	73.6	73.1	71.8	68.9	69.6	68.7	
Total rail and road	102.9	108.8	109.3	113.1	116.6	121.6	124.8	123.1	130.4	138.7	143.5	

Sources: British Transport Commission

Annual Report and Accounts

Public Road Passenger Transport Statistics

Road Research Laboratory

Ministry of Transport departmental estimates.

⁽¹⁾ Local authorities' services and London Transport central buses, trolleybuses and trams.⁽²⁾ Other services including London Transport country buses and coaches.⁽³⁾ Rough estimates based upon traffic counts and an assumed constant average occupancy per vehicle.⁽⁴⁾ Strike on British Railways from 29th May to 15th June.⁽⁵⁾ Rationing of petrol for private cars from November 1956 until May 1957. Strike affecting provincial buses from 19th July to 29th July 1957.⁽⁶⁾ London Transport bus strike from 5th May to 21st June.

Table 7

Summary of railway freight traffic forecasts

	Million ton-miles				Gross receipts, £ million, at 1960 level of average charges			
	1970		1980		1970		1980	
	Low	High	Low	High	Low	High	Low	High
Coal and coke	7,620	6,300	6,630	5,750	109	95	71	82
Iron and steel traffics:								
materials	2,440	2,750	2,870	3,490	33	39	42	48
products	1,160	1,150	1,200	1,430	16	17	17	20
total	3,610	3,900	4,070	4,910	49	56	59	68
General goods: ⁽¹⁾								
Assumption A	6,940	6,940	6,940	6,940	102	102	102	102
Assumption B	{ 7,800	8,800	10,200	14,000	{ 115	129	150	206
To all freight train traffic:								
Assumption A	18,170	17,140	16,180	17,600	261	252	232	252
Assumption B	{ 18,000	19,500	19,410	24,660	{ 258	280	280	356
Parcels, mails, etc. by coaching train	—	—	—	—	56	62	60	65
Total freight traffic receipts:								
Assumption A					316	314	292	317
Assumption B					{ 303	342	340	421

⁽¹⁾ See paragraph 31 for assumptions.

Table 8

Summary of road traffic forecasts: traffic on inter-urban roads

	Traffic in thousand million passenger car units ⁽¹⁾				Average annual percentage change			
	1970		1980		1959 to 1961		1960 to 1970	
	Low	High	Low	High	Low	High	Low	High
1960								
Cars and taxis	21.0	40.6	53.5	73.6	+8.9	+8.8	+2.8	+4.2
Motor cycles, etc.	1.9	1.8	1.7	1.7	-4.3	-0.5	-0.5	-0.5
Buses and coaches	2.9	2.5	2.2	2.2	+1.6	-1.4	-1.4	-1.4
Heavy goods vehicles ⁽²⁾								
Assumption A	11.0	15.3	20.8	29.3	+4.8	+4.8	+3.1	+5.2
Assumption B		14.9	19.3	26.2		+4.3	+2.6	+4.6
Vans	3.4	4.6	6.1	7.0	+8.1	+3.3	+3.0	+4.0
All motor vehicles:								
Assumption A	40.2	64.8	84.3	113.8	+6.6	+6.5	+2.7	+4.2
Assumption B		64.4	82.8	110.7		+6.4	+2.5	+4.0

(1) See paragraph 19.

(2) See paragraph 31 for assumptions.

MINISTRY OF TRANSPORT

The Transport Needs of Great Britain in the Next Twenty Years

*Report of a Group under the
Chairmanship of Sir Robert Hall.*



LONDON
HER MAJESTY'S STATIONERY OFFICE
1963

Sir Robert Hall, Economic Adviser to the Minister of Transport, has been supervising studies in the Ministry of Transport of the likely demand for inland transport facilities over the next twenty years. The work has been carried out by a small Group, with members from within and outside Government Departments, meeting under Sir Robert's Chairmanship. This is the Group's report.